UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF COMMERCIAL FISHERIES

CALIFORNIA FISHERY MARKET NEWS MONTHLY SUMMARY

MAY 1967

PART II–Fishing Information*

Sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists

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Bureau of Commercial Fisheries
Tuna Resources Laboratory
P. O. Box 271
La Jolla, California 92038

*Part 1 - "Fishery Products Production and Market Data" is issued by the Bureau of Commercial Fisheries, Market News Service, Post Office Building, San Pedro, California

TEMPERATE TUNA FORECAST FOR 1967

The ensuing forecast is the seventh consecutive annual prediction to be issued for the seasonal summer albacore and bluefin tuna fisheries off the Pacific Coast. Over the years since 1961, the staff of the Tuna Forecasting Program at the Bureau of Commercial Fisheries Tuna Resources Laboratory, La Jolla, California, has proceeded to improve its measures of ocean environmental conditions and their changes from late spring to late fall of each year. Satisfactory measurement of biological aspects of the fish populations has lagged considerably behind our progress in monitoring the environment, however, and our understanding of the economic mechanisms resulting in total fishing effort has made even less progress than the other areas of endeavor.

Consequently, although our ability to foretell near-term changes in environmental conditions has improved measurably each year, we have continued to score poorly in predicting total landings for both tuna species. This failure stems largely from our inability to obtain satisfactory estimates of (a) fish year-class size, (b) fish abundance, (c) fishing effort to be expended by the fleet during the season, and (d) economic factors which indirectly affect landings through the price structure at dockside. We are initiating studies on items (a) and (b) above, but have not yet made sufficient progress to incorporate the knowledge gained in our present forecast.

Albacore Tuna

In previous years, we have attempted to give three separate estimates of where, when, and how much albacore tuna may be taken at the commencement of and during the season. This year, fiscal limitations and unavailability of research vessels have precluded the usual April oceanographic cruise by the Marine Life Research-California Cooperative Oceanic Fishery Investigations, which in previous years collected the temperature and salinity data necessary to the computation of our "optimum area" index for albacore. Consequently, this year, we are not able to present this portion of our forecast statement. Instead, we are presenting our "best guess" region based solely on our knowledge of the April-July changes in thermal conditions off Southern California-Baja California (Figure 1). Coastal upwelling appears to have intensified in the

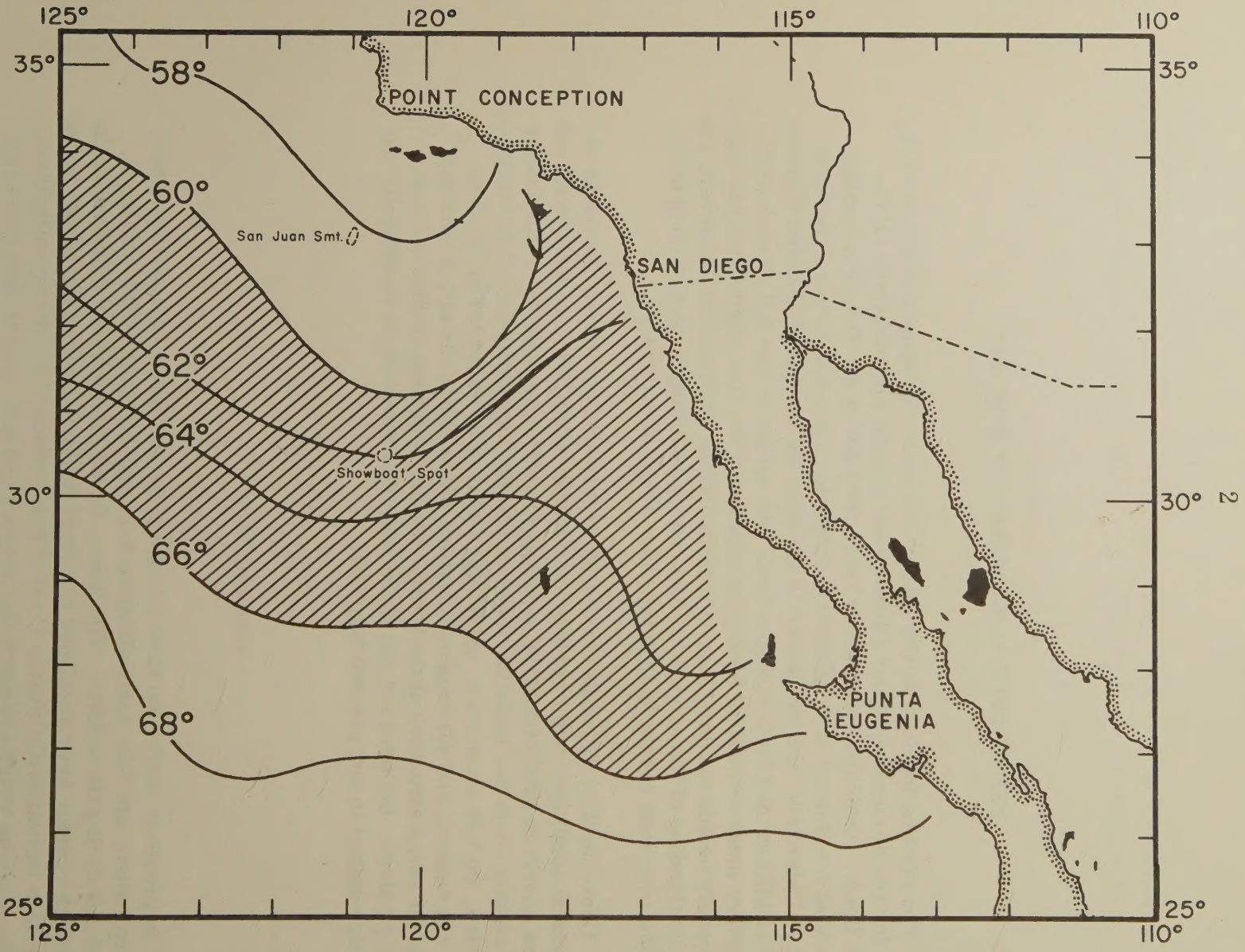

Figure 1.--Forecast sea surface temperature field for July 1-15, 1967. Waters within the shaded zone are expected to yield most of the albacore tuna to be taken during this period.

region from Point Conception to Punta Banda in April; if these conditions prevail during the remainder of May and into June, sea temperatures offshore should be as much as 2° F. colder than July last year.

The open ocean in the region encompassing the general migratory route of albacore (east of longitude 140° W.) appears to be warming slightly less than average, indicating that the shoreward migrants will probably be later than last season and appear in the first or second week of July. Waters off Cape Mendocino and Cape Blanco are warming less rapidly than last year, suggesting that if this trend continues unabated, the Oregon fishery will probably commence in the third or fourth week of July, about 3 weeks later than last year.

July landings in Southern California will probably be below the 1945-66 average of 7,582,366 pounds (3,791 tons). Total season landings from Southern California-Baja California should improve substantially from last year (the poorest since 1947), reflecting a southward trend in the distribution of fish this year. Oregon production probably will fall off from last year's record,[1/] reflecting a return to cooler, more normal oceanographic conditions in that region. Fragmentary data on year-class representation suggests that fish abundance may be average for all size groups entering the fishery; thus, total U. S. West Coast landings are expected to be near the 1944-65 average of 42,000,000 pounds (21,000 tons).

Bluefin Tuna

In previous years, we have restricted our forecasts for bluefin tuna solely to the Southern California offshore region. This year, however, we are attempting to provide the same kind of statements as for albacore.

The high-seas purse seine fleet has already begun to assemble in the Cape San Lucas-Cape San Lazaro, Baja California offshore region. At the present time, the boats are reported to be working in warm water on yellowfin and skipjack, but unconfirmed rumors report bluefin schools appearing in the 65-67° F. water off Point Tosco (see Figure 2). For the past 4 years, oceanographic conditions in this region have created a zone of 65-67° F. water extending from

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[1/] See California Fishery Market News Monthly Summary, Part II-Fishing Information, October 1966, pp. 1-2.

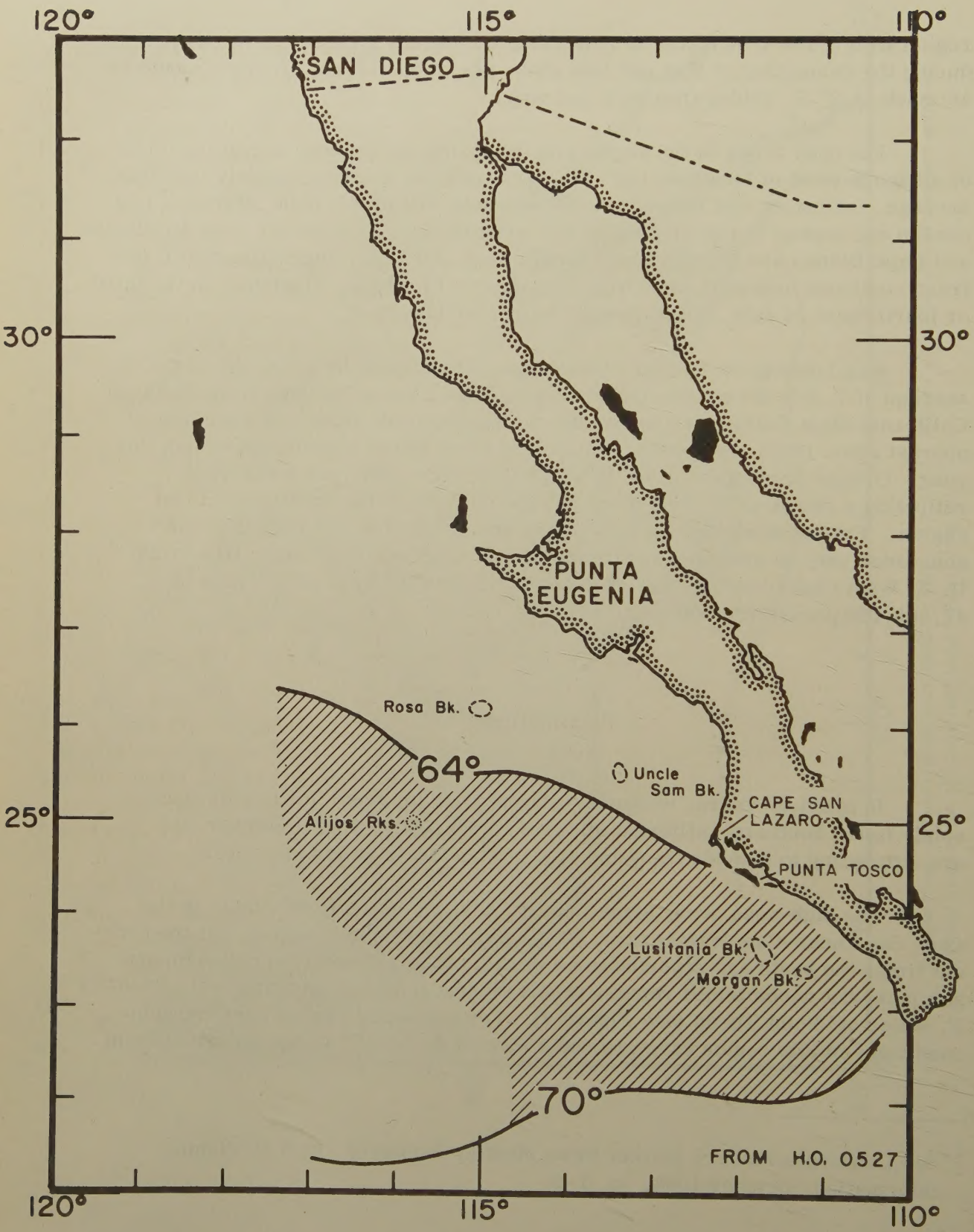


Figure 2.--Shaded zone delimits the region expected to produce bluefin tuna during the June 1-15, 1967 interval.

the northwest approaching the coast between Cape San Lazaro and Cape San Lucas. This region is expected to produce bluefin again this season, and the first commercial action should be well underway by Memorial Day, winds and seas permitting. Coastal upwelling has been accelerated substantially during the last 4-6 weeks in this area, due largely to stronger northwesterly winds than last year at the same time.

Bluefin tag return data indicate that the open ocean off Baja California from 50-300 miles out appears to embrace the northward migratory route as the summer season advances. Once the season commences off Cape San Lazaro-Point Tosco, we expect again to see the bulk of the 1967 production originating from the region south of the International Border. Bluefin are expected to appear in the Southern California offshore area by the third week of August; however, production from this area is expected to comprise a relatively small percentage of the total catch.

Last year, an all-time high of 34,820,406 pounds (17,410 tons) of bluefin tuna were taken by the purse seine fleet. Although this production record may not be duplicated again this year, we have reason to expect production to be above the 1961-66 average of 26,060,312 pounds (13,030 tons). This estimate is based on the expected return of last season's strong incoming year-class (which produced a large percentage of the total tonnage landed), and also on a very high amount of fishing effort by a modern, efficient purse seine fleet this year. Effort could increase further if the yellowfin tuna season closure is effected in mid summer.

Climatologically, the U. S. West Coast should experience a return to more normal weather conditions this year. The mean sea level pressure pattern trends currently being observed suggest that pressure gradients will be intensified this summer, northwesterly wind flow will be enhanced, and mid-summer coastal upwelling will be more evident than last year, especially from Point Conception to Cape Mendocino. These conditions augur for increased turbulence, mixing, cold advection and evaporative cooling of the upper mixed layer of the sea, and intensification and expansion of the length and breadth of the cold-water upwelling zone. Fishermen are advised to observe weather trends carefully, and to make full use of the sea temperature charts and advisory materials available from the Tuna Resources Laboratory via Radio Station WWD broadcasts.

Full-scale operation of the Naval Weather Service Environmental Data Network link with the master computer facility at Monterey should augment our understanding of oceanographic and climatological events this year. We will receive computer products updated at 3-, 12-, and 24-hour intervals, thus permitting our staff to monitor environmental changes almost as they occur. Significant changes which are observed between issuance of this forecast and commencement of the tuna fisheries will be reported as they take place via this publication, special bulletins, and the Radio Station WWD daily fishing information broadcasts after June 1 (see schedule, next page). In addition, as the summer season progresses, we expect to update and project ahead oceanographic information and catch reports so that fishermen at sea can make maximum use of the data available.

May 19, 1967

Staff, Tuna Forecasting Program

ALBACORE SEASON - 1967 OPERATIONS

Radio Station WWD, licensed to the Bureau of Commercial Fisheries and located on the campus of the Scripps Institution of Oceanography, University of California at San Diego, will resume its broadcasts of daily albacore fishery information again this year. Double sideband voice broadcasts will emanate from WWD twice daily from June 1-October 31 on frequency 4415.8 kcs at 0500 PST (0600 PDST) and 1945 PST (2045 PDST). Broadcasts will include the latest albacore information obtained from research vessels, cooperating fishing vessels, and will contain sea temperatures observed at selected points and other pertinent weather information believed useful to albacore fishermen.

In addition, at the end of each 15-day calendar period, the Tuna Resources Laboratory will code and prepare for transmission (twice daily for two conseutive days) the 15-day sea surface isotherm charts which are routinely mailed to about 800 readers. Map coordinates for the 15-day chart analysis ending on a given date covering the region east of 130° W. longitude and 30°-50° N. latitude will be coded as part of the message.

Sample Broadcast

WWD BCF daily albacore fishery information October 14, 1966

Oregon: Fishing very poor for trollers, but baitboats continue to do fairly well. Weather has improved and the outlook is good for the weekend.

Central California: Boats have been kept in by sloppy weather. No catches in last 2 days. Wind has now gone down and outlook is good for the weekend. Boats are returning to fishing grounds.

Southern California: No reports.

Weather summary:
Low pressure system over Alaska at 141200 Z expected to push into Gulf Alaska next 36 hours. Intense high pressure system over Pacific northwest expected to persist next 36 hours to cause light-variable winds Washington to northern California and continued "Santa Ana" type weather with strong northeast to easterly winds central and southern California next 36 hours.
Sea heights: 2-3 feet Washington-Oregon. 5-6 feet northern California decreasing to 3-4 feet next 36 hours. 6-9 feet central California and 5-6 feet southern California decreasing to 4-5 feet next 36 hours.

Map coordinates for 15-day charts ending October 14, 1966 covering region east of 130 W longitude and 25-50 N latitude.
Message coded as follows:
First 3 numbers are latitude in degrees and tenths
Last 4 numbers are longitude in degrees and tenths
Message:

Position of 60-degree isotherm	Position of 66-degree isotherm
4771300	3771300
4811281	3501270
4771270	3321260
4711261	3301245
4711248	3121215
4671245	3121205
4451245	3181193
4301252	3331188
4051253	3401195
3931244	
3771236	
3721227	

Word summary:
The 60-degree isotherm has moved 50-150 miles southward in the Washington offshore region last 15 days. Look for continued southerly movement next 15 days to about 45 N latitude. The 60-degree isotherm expected to assume position extending southeastward from 45 N latitude 128 W longitude to 40 N latitude 126 W longitude and to coast at 35 N latitude. Look for best fishing Cape Mendocino to Davidson Seamount as isotherm moves off Oregon coast next 15 days.

(End of broadcast.)
TRL La Jolla

This message, when decoded and plotted as in the example following this section, provides the fisherman at sea with a current analysis of the 60°-66° F. temperature zone (from which more than two-thirds of the total Pacific coast albacore landings have been produced in recent years). In addition, a word summary of the Tuna Resources Laboratory staff's best estimate of what is expected to happen in the succeeding 15-day period will be included as in the sample above.

To make the advisory broadcast fully effective, the Tuna Resources Laboratory requires timely information from all sources at sea and ashore. To provide a medium for communication of oceanographic and current fishing data, Radio Station WWD will operate on the following frequencies and scheduled times:

Voice only	Telegraph only
4,415.8 kcs	4,262 kcs
8,805.6 kcs	8,698 kcs
12,403.5 kcs	12,871 kcs
16,533.5 kcs	17,105 kcs

Hours of Operation: Unlimited as requested, normally 0400-0100 local time seven days per week, including holidays.

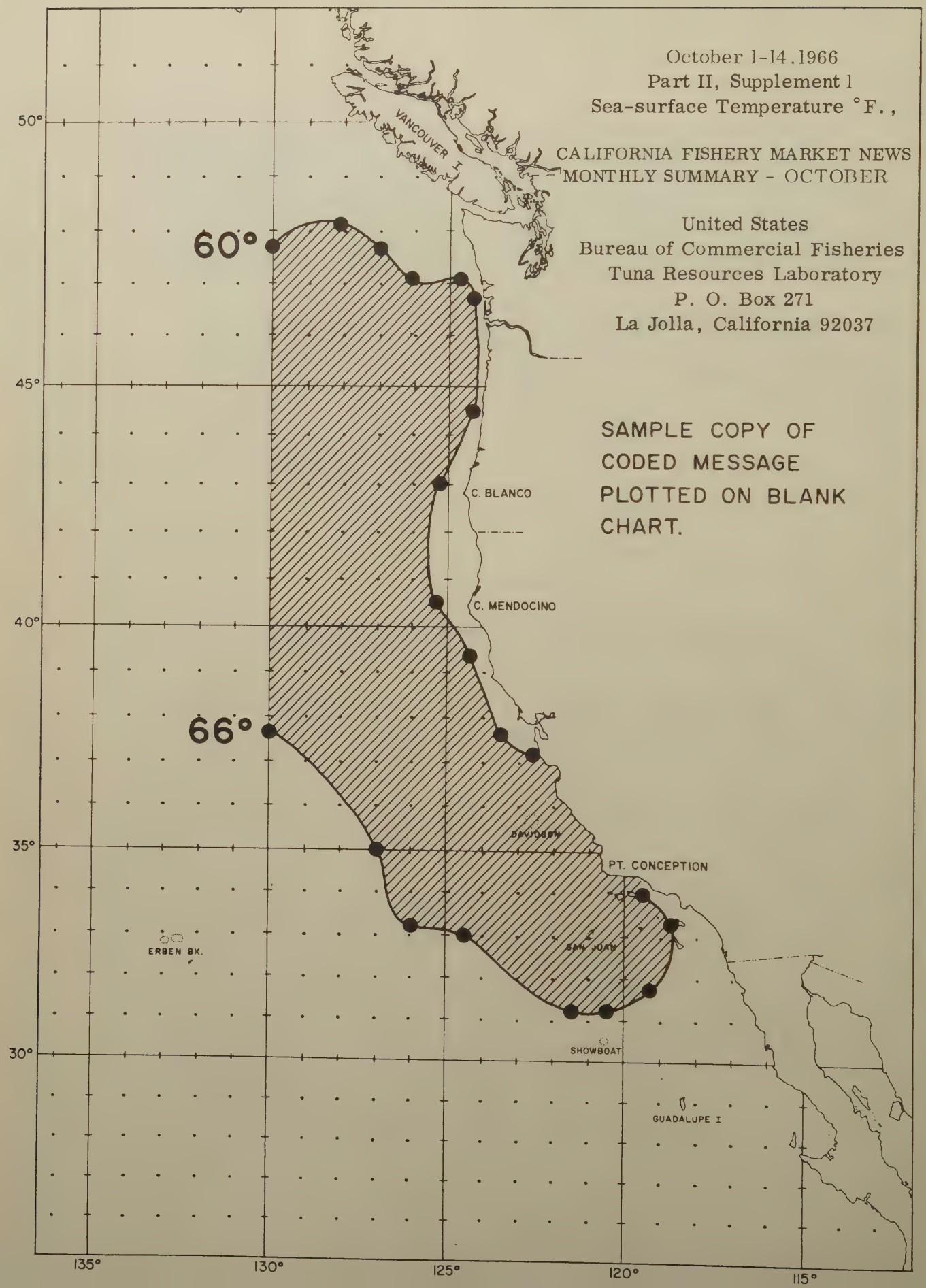
Class of Traffic: As approved by Radio Station WWD. Inter-ship operation, other than for relay of traffic and scientific exchange of data, is not authorized.

Boat operators interested in participating directly to provide information services to WWD are requested to write to

Laboratory Director
Tuna Resources Laboratory
Bureau of Commercial Fisheries
P. O. Box 271
La Jolla, California 92037

for further details.

Staff, Tuna Forecasting Program
May 19, 1967


October 1-14.1966
Part II, Supplement 1
Sea-surface Temperature °F.,
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - OCTOBER
United States
Bureau of Commercial Fisheries
Tuna Resources Laboratory
P. O. Box 271
La Jolla, California 92037
SAMPLE COPY OF
CODED MESSAGE
PLOTTED ON BLANK
CHART.
60°
66°
VANCOUVER I
C. BLANCO
C. MENDOCINO
PT. CONCEPTION
ERBEN BK.
SAN JOAN
SHOWBOAT
GUADALUPE I
50°
45°
40°
35°
30°
135°
130°
125°
120°
115°

SEA SURFACE TEMPERATURE CHARTS, EASTERN PACIFIC OCEAN

MAY 1967

Acknowledgements

The following organizations and stations contributed data for the May 1967 charts:

U.S. Bureau of Commercial Fisheries Exploratory Fishing and Gear Research Base, Seattle, Washington
U.S. Bureau of Commercial Fisheries Biological Laboratories La Jolla, California; Honolulu, Hawaii; and Seattle, Washington
U.S. Coast Guard Air Station, San Diego, California
U.S. Naval Communication Station Balboa, Fort Amador, Canal Zone
U.S. Naval Weather Service, Fleet Numerical Weather Facility, Monterey, California
California Department of Fish and Game, R/V N.B. Scofield
Environmental Science Services Administration
U.S. Weather Bureau, San Diego, California
U.S. Weather Bureau Forecast Center, Los Angeles, California
Hopkins Marine Station, Pacific Grove, California by J. P. Balesteri
Inter-American Geodetic Survey by David Ortega at Manzanillo, Mexico; L. A. Peren at Pt. Armuelles, Panama; V. E. Castillo at Tumaco, Colombia; S. Valenzuela at La Libertad, Ecuador; E. Guerrero at Talara, Peru; J. Cardenas and Juan Andia at San Juan, Peru; Caldera, Valparaiso and Talcahuano, Chile, through the courtesy of St. Hellmuth A. Sievers C. at the Instituto Hidrografico de la Armadà, Valparaiso, Chile
Inter-American Tropical Tuna Commission, La Jolla and Terminal Island, California
Kelco Company, San Diego, California
Oregon State University, Department of Oceanography, Corvalis, Oregon, R/V Yaquina
Pacific Oceanographic Group, Nanaimo, British Columbia, by H. J. Hollister from observations by T. Collins at Quatsino Lightstation; G. M. Thompson at Cape St. James Light; O. A. Edwards at Amphitrite Point Light; G. C. Wilkes at Langara Island Light
Scripps Institution of Oceanography, La Jolla, California by Margaret Robinson and Hans Klein
W. R. Grace and Company, New York by Dr. I. William Lane
Ship Californian

Charts

Figure 1.--Mean sea surface temperatures (°F) derived from approximately 9000 observations. Squares show temperatures at weather ship stations. Numerals on shore are temperatures at coastal and lightship stations.

Figure 2.--Deviation of sea surface temperatures (°F) from long term charts of H.O. 225. Hatched areas are colder in 1967.

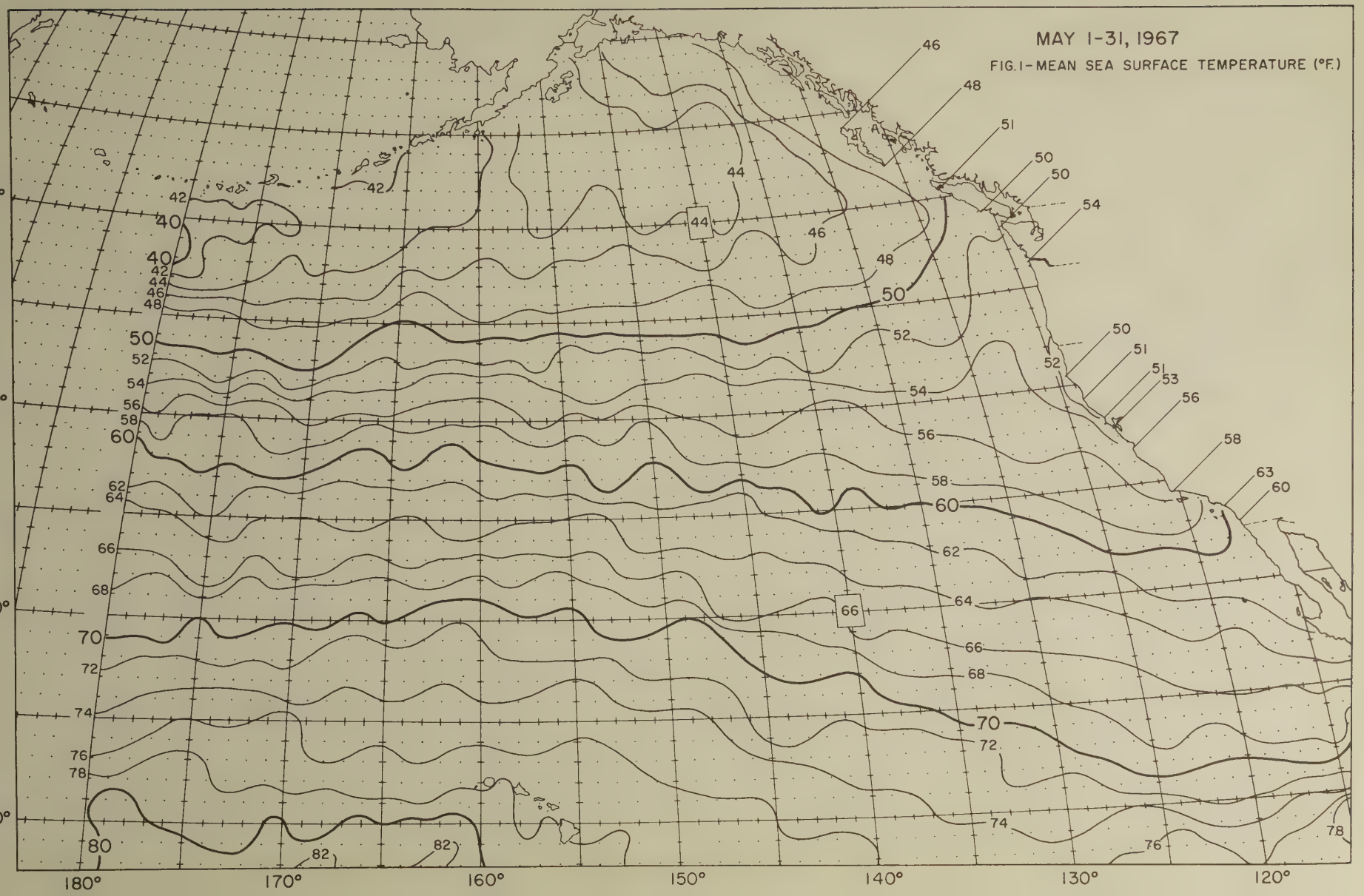
Figure 3.--Deviation of sea surface temperatures (°F) from those of May 1966. Hatched areas are colder in 1967.

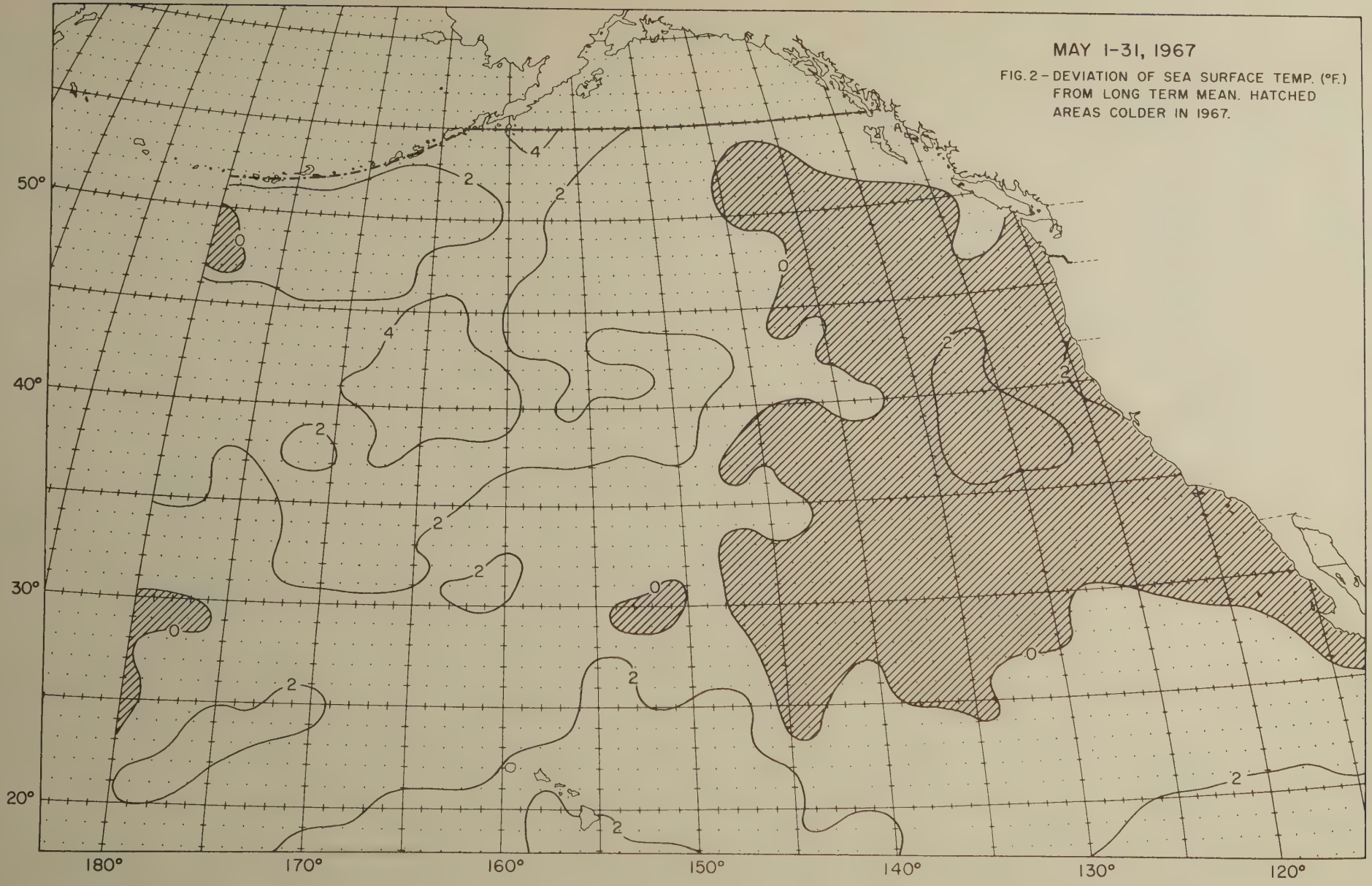
Figure 4.--Sea surface temperatures (°F) by 1-degree squares, approximately 3000 observations. Line under temperatures indicates average of two or more observations. Numerals on shore are temperatures at coastal stations.

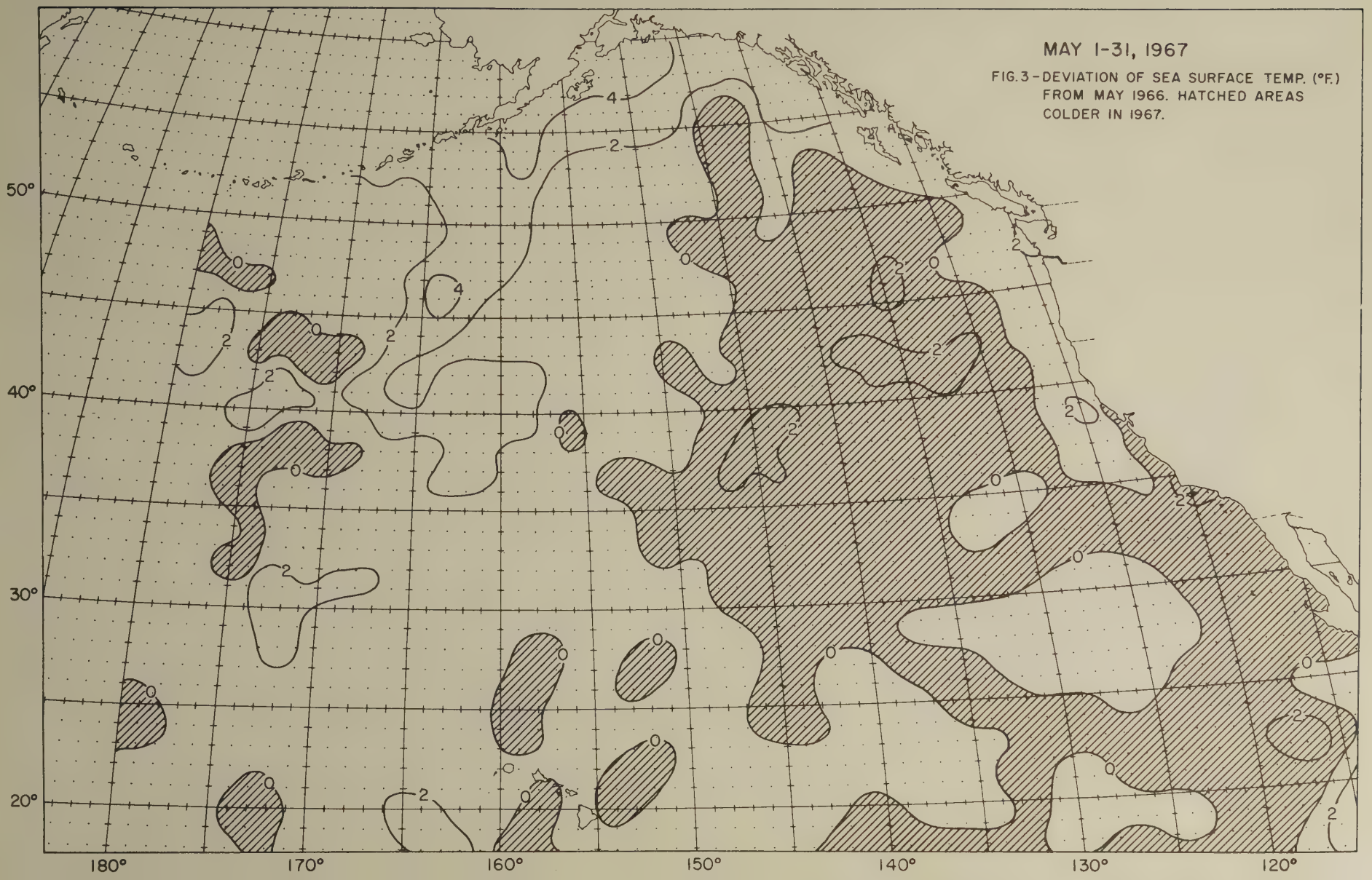
Figure 5.--Deviation of sea surface temperatures (°F) May 1967-May 1966 by 1-degree squares. Shaded areas are colder in 1967.

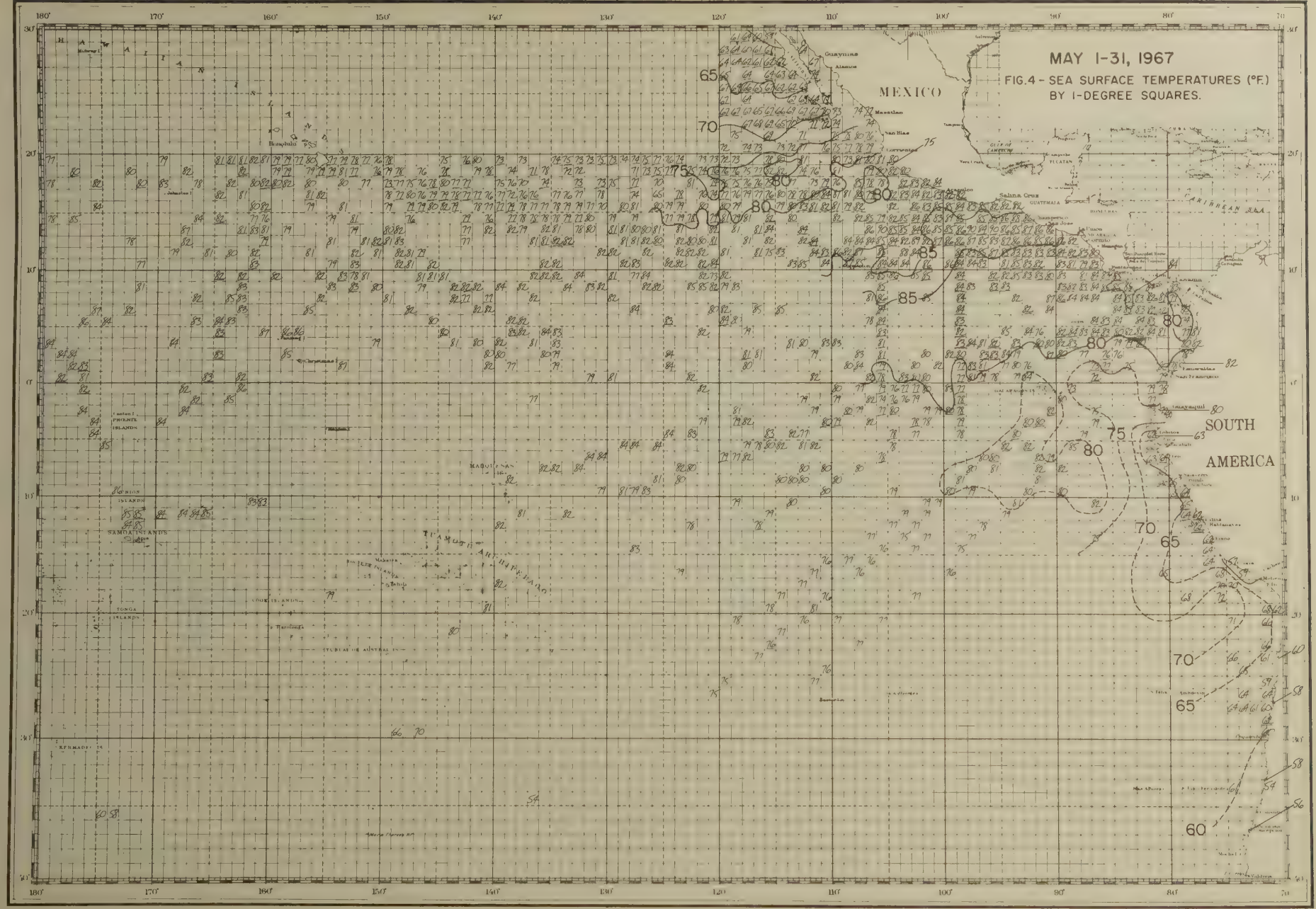
Figure 6.--Deviation of sea surface temperatures (°F) from 12-year mean (1947-1958) by 2-degree squares. Shaded areas are colder in 1967.

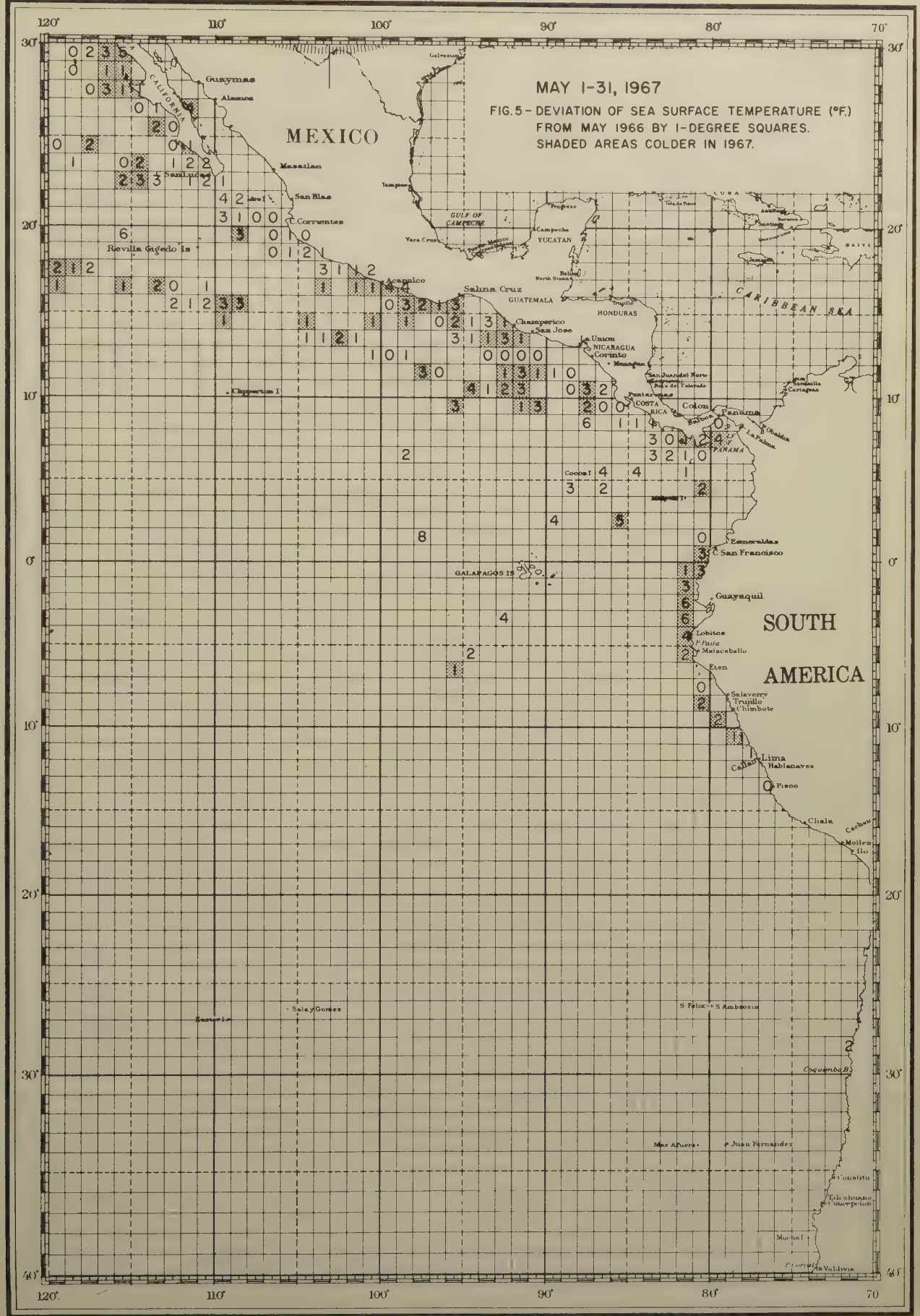
James A. Renner
Fishery Biologist (General)
June 6, 1967


MAY 1-31, 1967
FIG. 1 - MEAN SEA SURFACE TEMPERATURE (°F.)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


MAY 1-31, 1967
FIG. 2 – DEVIATION OF SEA SURFACE TEMP. (°F.) FROM LONG TERM MEAN. HATCHED AREAS COLDER IN 1967.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4


MAY 1-31, 1967
FIG. 3 - DEVIATION OF SEA SURFACE TEMP. (°F.) FROM MAY 1966. HATCHED AREAS COLDER IN 1967.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


MAY 1-31, 1967
FIG.4 - SEA SURFACE TEMPERATURES (°F.)
BY 1-DEGREE SQUARES.
MEXICO
SOUTH
AMERICA
CARIBBEAN SEA
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
10°
20°
30°


MAY 1-31, 1967
FIG. 5 - DEVIATION OF SEA SURFACE TEMPERATURE (°F.) FROM MAY 1966 BY 1-DEGREE SQUARES. SHADED AREAS COLDER IN 1967.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF CAMPECHE
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
PANAMA
CUBA
HAITI
JAMAICA
GALAPAGOS IS
Guaymas
Alamos
Mazatlan
San Blas
Corrientes
Revilla Gigedo Is
Acapulco
Salina Cruz
Champerico
San Jose
Corinto
Managua
Punta Arenas
Colon
Panama
Esmeraldas
San Francisco
Guayaquil
Lobitos
Talara
Mancora
Eten
Salaverry
Trujillo
Chimbote
Lima
Callao
Pisco
Chala
Cachau
Mollendo
Ilo
Arica
Iquique
Tocopilla
Antofagasta
Coquimbo
Valparaiso
Juan Fernandez
Mas Afuera
S. Felix
S. Ambrosio
Sala y Gomez
Easter Is
Constitucion
Talcahuano
Concepcion
Corral
Valdivia
Mocha I.
Cocos I.
Chipperton I.
Galveston
Tampico
Vera Cruz
Progreso
Campeche
Belize
Trujillo
Roatan
Puerto Cortes
Tela de Toro
Santiago
Kingston
Port au Prince
Cap Haitien
Guantanamo
Santiago
Barranquilla
Cartagena
Puerto Limon
Chiriqui
Balboa
Chitre
Las Palmas
Puerto Armuelles
Punta Mariato
Puerto Pizarro
Puerto Bolivar
Tumbes
Paita
Malabrigo
Salaverry
Huacho
Callao
Pisco
Chala
Cachau
Mollendo
Ilo
Arica
Iquique
Tocopilla
Antofagasta
Coquimbo
Valparaiso
Juan Fernandez
Mas Afuera
S. Felix
S. Ambrosio
Sala y Gomez
Easter Is
Constitucion
Talcahuano
Concepcion
Corral
Valdivia
Mocha I.
120°
110°
100°
90°
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20°
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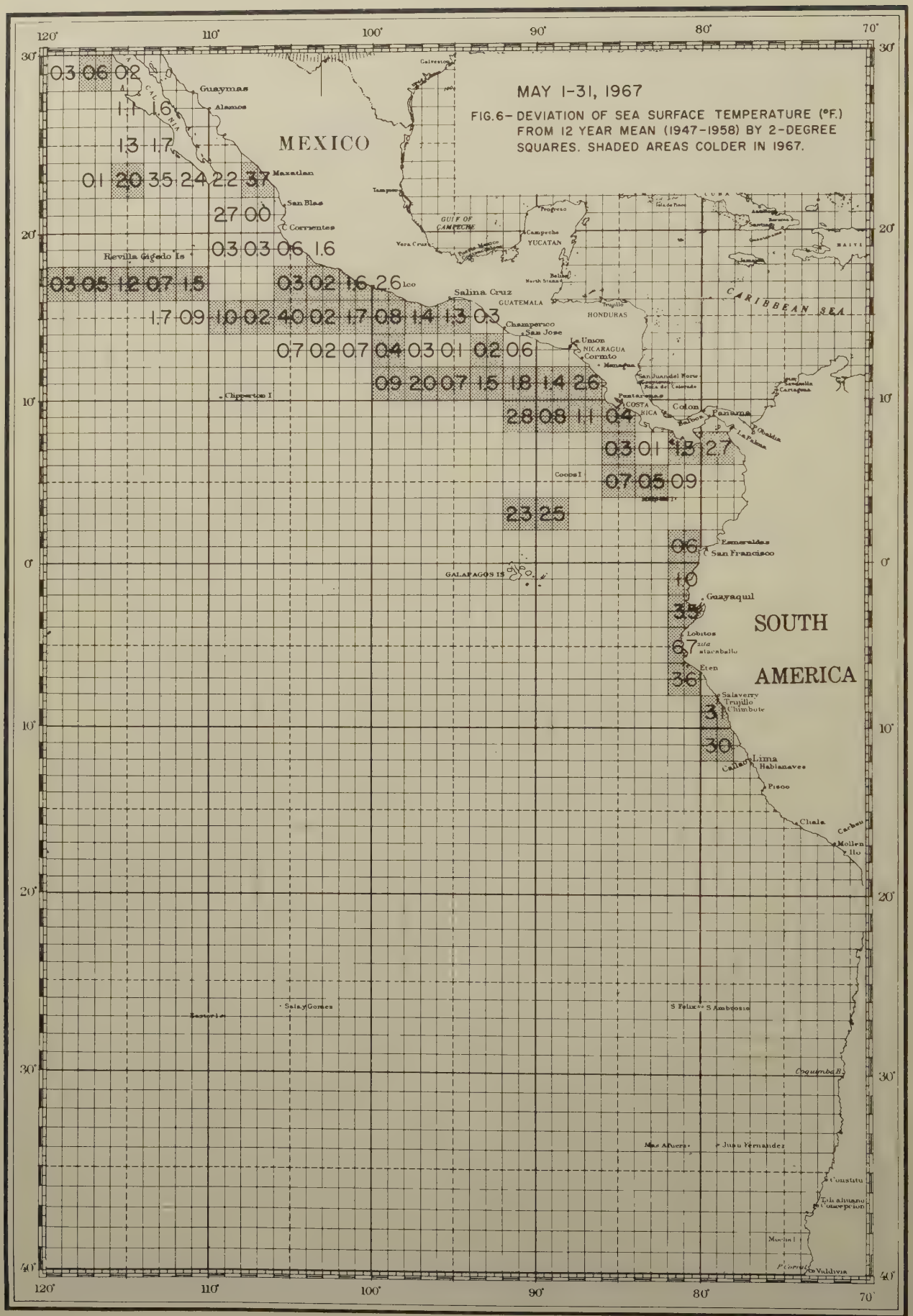
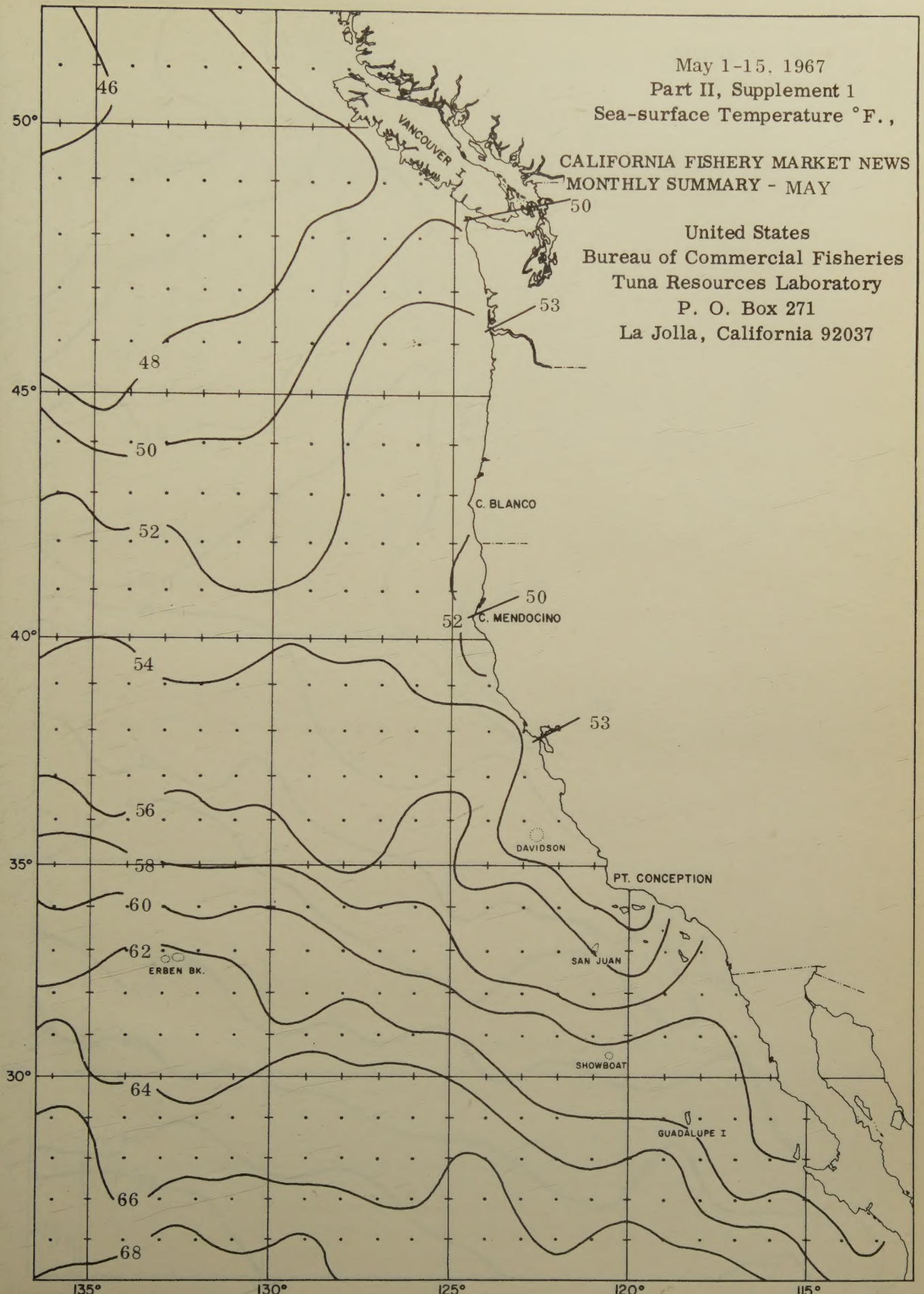

MAY 1-31, 1967
FIG.6- DEVIATION OF SEA SURFACE TEMPERATURE (°F.) FROM 12 YEAR MEAN (1947-1958) BY 2-DEGREE SQUARES. SHADED AREAS COLDER IN 1967.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF CAMPECHE
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
GALAPAGOS IS
Guaymas
Alamos
Mazatlan
San Blas
Corrientes
Salina Cruz
Champerico
San Jose
La Union
Cormito
Managua
Panama
Colon
Guayaquil
Lobitos
Eten
Salaverry
Trujillo
Chimbote
Lima
Callao
Pisco
Chala
Mollendo
Arica
Iquique
Antofagasta
Valparaiso
Concepcion
Valdivia
Mocha I.
Juan Fernandez
Mas Afuera
S. Felix
S. Ambrosio
Easter I.
Salas y Gomez
Coquimbo B.
Chipperton I
Coco I
Revilla Gigedo Is
Galveston
Tampico
Vera Cruz
Progreso
Campeche
Belize
Trujillo
Cuba
Haiti
Jamaica
Curacao
Aruba
Barranquilla
Cartagena
Santa Marta
Maracaibo
Esmeraldas
San Francisco
Tumaco
Buenaventura
Cabo Blanco
Talara
Paita
Pimentel
Huacho
Tocopilla
Mejillones
Caldera
Coquimbo
Constitucion
Talcahuano
Corral
Ancud
Puerto Montt
Osorno
Valdivia
Lobos de Afuera
Lobos de Tierra
Isla de Pinos
Isla de Aves
Roca del Coloroda
Roca Partida
Punta Mala
Punta Arenas
Isla Malpelo
Isla Gorgona
Isla Malpelo
Isla Gorgona
Isla Malpelo
Isla Gorgona


May 1-15, 1967
Part II, Supplement 1
Sea-surface Temperature °F.,
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - MAY
United States
Bureau of Commercial Fisheries
Tuna Resources Laboratory
P. O. Box 271
La Jolla, California 92037
VANCOUVER I.
C. BLANCO
C. MENDOCINO
DAVIDSON
PT. CONCEPTION
SAN JUAN
SHOWBOAT
GUADALUPE I
ERBEN BK.
46
48
50
52
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30°
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130°
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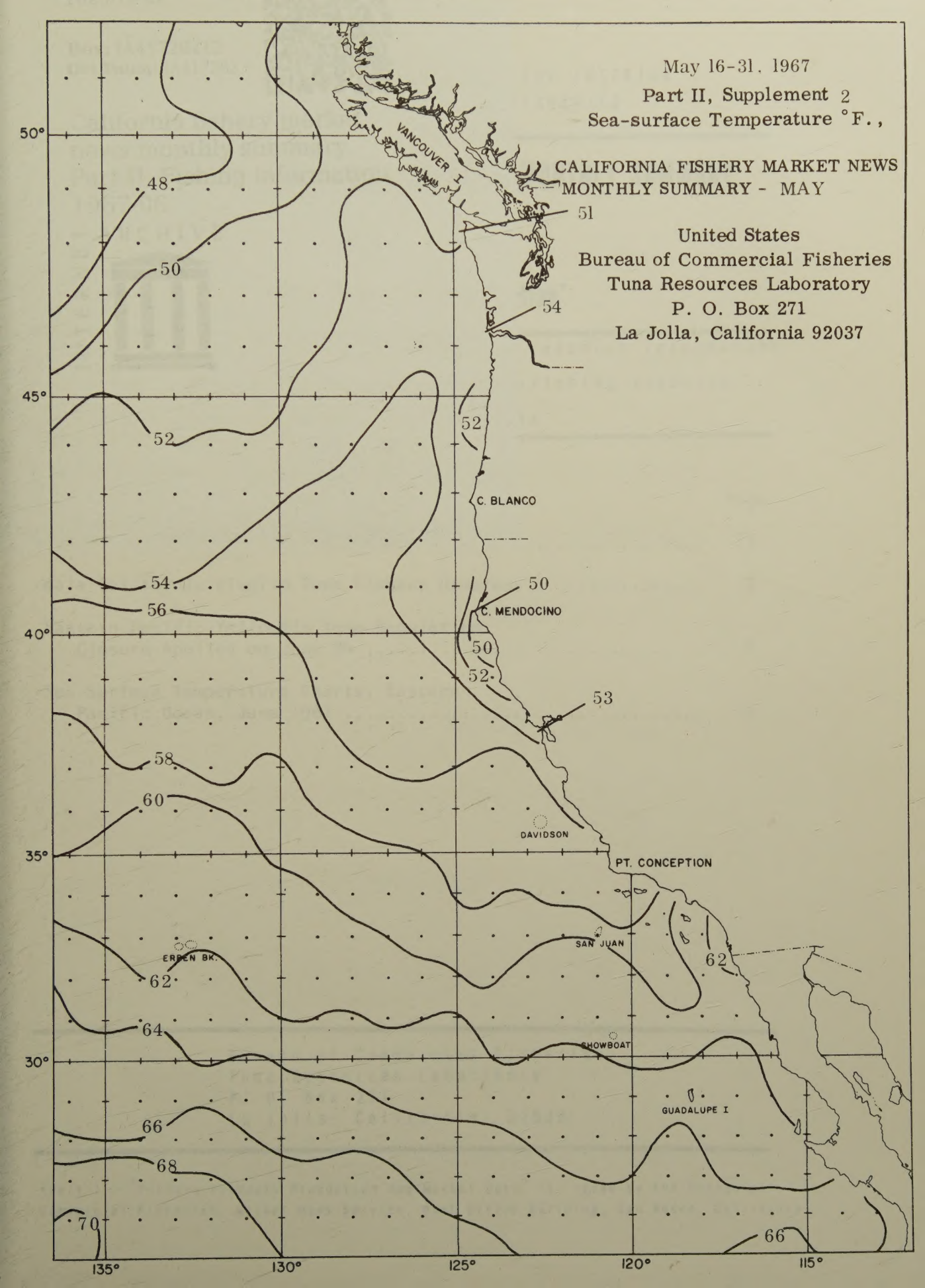
May 16-31. 1967
Part II, Supplement 2
Sea-surface Temperature °F.,
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - MAY
United States
Bureau of Commercial Fisheries
Tuna Resources Laboratory
P. O. Box 271
La Jolla, California 92037
VANCOUVER I
C. BLANCO
C. MENDOCINO
DAVIDSON
PT. CONCEPTION
SAN JUAN
ERBEN BK.
SHOWBOAT
GUADALUPE I
48
50
51
52
53
54
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58
60
62
64
66
68
70
50°
45°
40°
35°
30°
135°
130°
125°
120°
115°